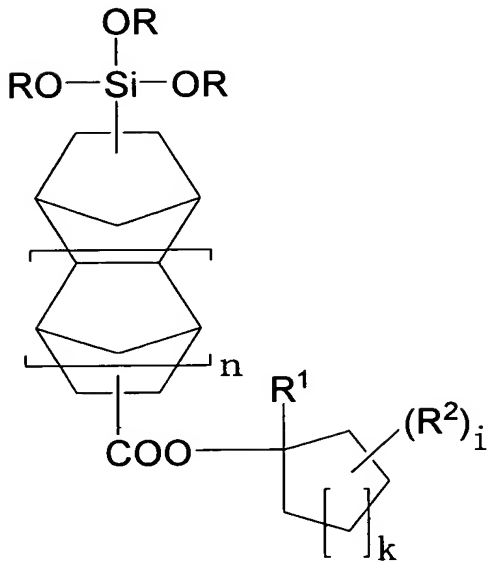
CLAIMS

1. A silane compound shown by the following formula (I),



(I)

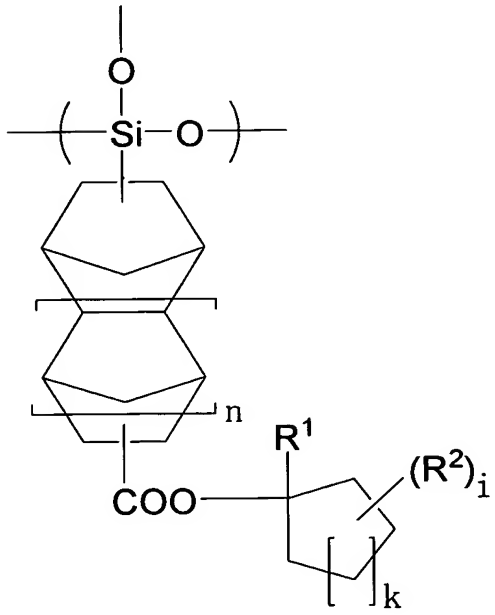
wherein R individually represents a linear, branched, or cyclic alkyl group having 1 to 20 carbon atoms, R^1 and R^2 individually represents a fluorine atom, a linear or branched alkyl group having 1 to 4 carbon atoms, or a linear or branched fluoroalkyl group having 1 to 4 carbon atoms, n is 0 or 1, k is 1 or 2, and i is an integer of 0 to 8 when k = 1 and an integer of 0 to 10 when k = 2.

2. The silane compound according to claim 1, wherein R in the formula (I) individually represents a methyl group or ethyl group.

3. The silane compound according to claim 1, wherein R^1 represents a methyl group or ethyl group and i is 0 in the formula (I).

4. The silane compound according to claim 1, wherein n is 0 in the formula (I).

5. A polysiloxane having a structural unit shown by the following formula (1) and having a polystyrene-reduced weight average molecular weight determined by gel permeation chromatography (GPC) in a range of 500 to 1,000,000,

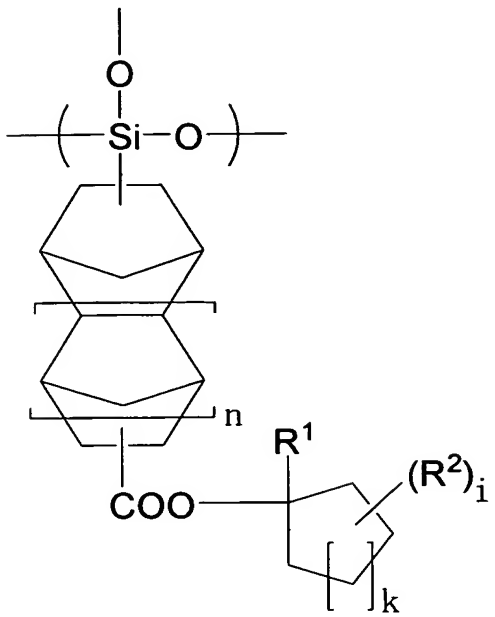


(1)

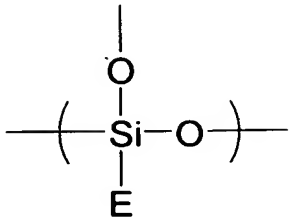
wherein R^1 and R^2 individually represents a fluorine atom, a linear or branched alkyl group having 1 to 4 carbon atoms, or a linear or branched fluoroalkyl group having 1 to 4 carbon atoms, n is 0 or 1, k is 1 or 2, and i is an integer of 0 to 8 when k = 1 and an integer of 0 to 10 when k = 2.

6. A polysiloxane having a structural unit shown by the following formula (1) and a structural unit shown by the following formula (3), and having a polystyrene-reduced weight average molecular weight determined by gel permeation

chromatography (GPC) in a range of 500 to 1,000,000,



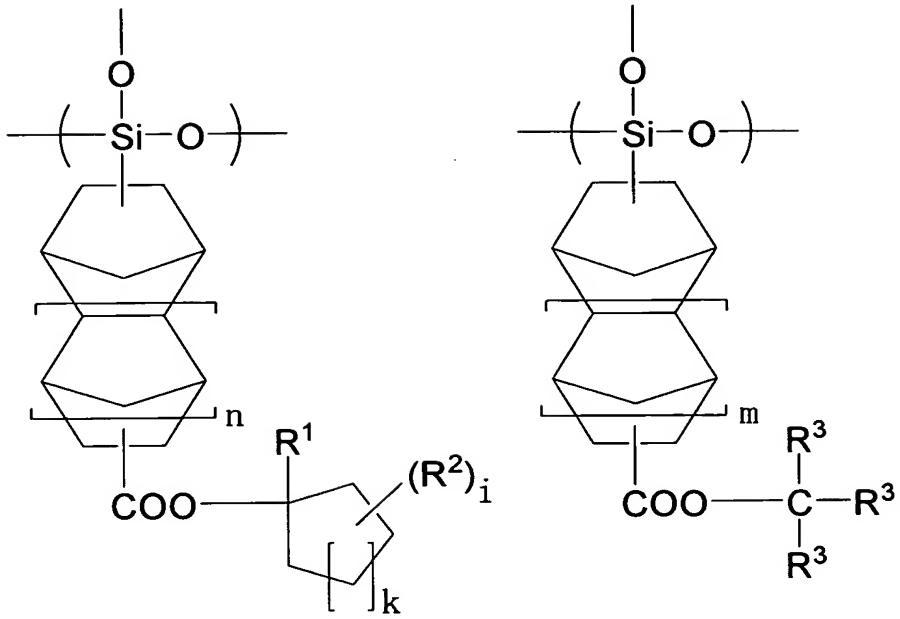
(1)



(3)

wherein in the formula (1), R^1 and R^2 individually represents a fluorine atom, a linear or branched alkyl group having 1 to 4 carbon atoms, or a linear or branched fluoroalkyl group having 1 to 4 carbon atoms, n is 0 or 1, k is 1 or 2, and i is an integer of 0 to 8 when k = 1 and an integer of 0 to 10 when k = 2, and in the formula (3), E is a monovalent organic group having a fluorohydrocarbon group.

7. A polysiloxane having a structural unit shown by the following formula (1) and a structural unit shown by the following formula (2) (excluding the structural unit shown by the following formula (1)), and having a polystyrene-reduced weight average molecular weight determined by gel permeation chromatography (GPC) in a range of 500 to 1,000,000,

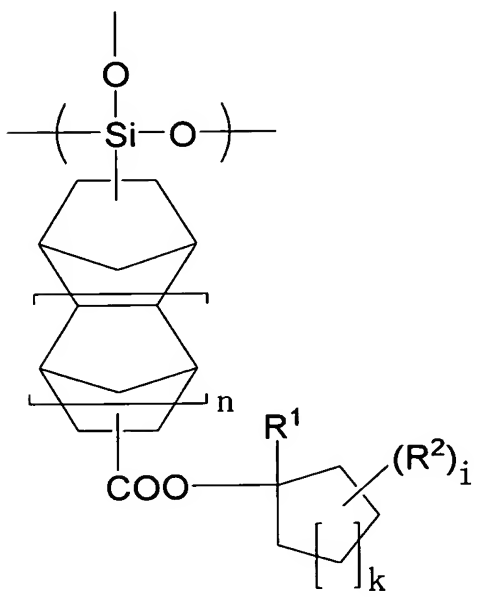


(1) (2)

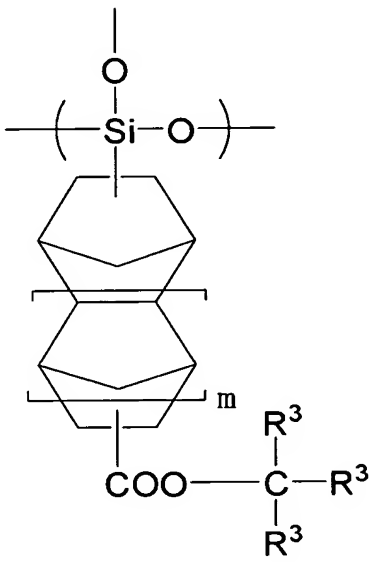
wherein in the formula (1), R^1 and R^2 individually represents a fluorine atom, a linear or branched alkyl group having 1 to 4 carbon atoms, or a linear or branched fluoroalkyl group having 1 to 4 carbon atoms, n is 0 or 1, k is 1 or 2, and i is an integer of 0 to 8 when k = 1 and an integer of 0 to 10 when k = 2, and in the formula (2), R^3 individually represents a linear or branched alkyl group having 1 to 4 carbon atoms or a monovalent alicyclic hydrocarbon group having 4 to 20 carbon atoms or a derivative thereof, or any two of R^3s form in combination a divalent alicyclic hydrocarbon group having 4 to 20 carbon atoms or a derivative thereof, with the remaining R^3 being a linear or branched alkyl group having 1 to 4 carbon atoms or a monovalent alicyclic hydrocarbon group having 4 to 20 carbon atoms or a derivative thereof, and m is 0 or 1.

8. The polysiloxane according to claim 7, wherein R^3 in the formula (2) individually represents a linear or branched alkyl group having 1 to 4 carbon atoms.

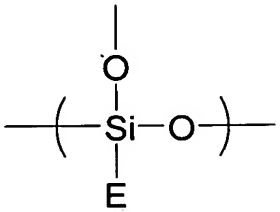
9. A polysiloxane having a structural unit shown by the following formula (1), a structural unit shown by the following formula (2) (excluding the structural unit shown by the following formula (1)), and a structural unit shown by the following formula (3), and having a polystyrene-reduced weight average molecular weight determined by gel permeation chromatography (GPC) in a range of 500 to 1,000,000,



(1)



(2)



(3)

wherein in the formula (1), R^1 and R^2 individually represents a fluorine atom, a linear or branched alkyl group having 1 to 4 carbon atoms, or a linear or branched fluoroalkyl group having 1 to 4 carbon atoms, n is 0 or 1, k is 1 or 2, and i is an integer of 0 to 8 when k = 1 and an integer of 0 to 10 when k = 2, in the formula (2), R^3 individually represents a linear or branched alkyl group having 1 to 4 carbon atoms or a monovalent alicyclic hydrocarbon group having 4 to 20 carbon atoms or a derivative thereof, or any two of R^3s form in combination a divalent alicyclic hydrocarbon group having 4 to 20 carbon atoms or a derivative thereof, with the remaining R^3 being a linear or branched alkyl group having 1 to 4 carbon atoms or a monovalent alicyclic hydrocarbon group

having 4 to 20 carbon atoms or a derivative thereof, and m is 0 or 1, and in the formula (3), E is a monovalent organic group having a fluorohydrocarbon group.

10. A radiation-sensitive resin composition comprising (A) the polysiloxane according to claim 5 and (B) a photoacid generator.

11. A radiation-sensitive resin composition comprising (A) the polysiloxane according to claim 6 and (B) a photoacid generator.

12. A radiation-sensitive resin composition comprising (A) the polysiloxane according to claim 7 and (B) a photoacid generator.

13. A radiation-sensitive resin composition comprising (A) the polysiloxane according to claim 8 and (B) a photoacid generator.

14. A radiation-sensitive resin composition comprising (A) the polysiloxane according to claim 9 and (B) a photoacid generator.

15. The radiation-sensitive resin composition according to claim 10, wherein (B) the photoacid generator is a compound generating a sulfonic acid by exposure to radiation.

16. The radiation-sensitive resin composition according to claim 11, wherein (B) the photoacid generator is a compound generating a sulfonic acid by exposure to radiation.

17. The radiation-sensitive resin composition according to claim 12, wherein (B)

the photoacid generator is a compound generating a sulfonic acid by exposure to radiation.

18. The radiation-sensitive resin composition according to claim 13, wherein (B) the photoacid generator is a compound generating a sulfonic acid by exposure to radiation.

19. The radiation-sensitive resin composition according to claim 14, wherein (B) the photoacid generator is a compound generating a sulfonic acid by exposure to radiation.